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# 广西柳城巨猿洞更新世陆龟一新种及其意义*

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两年前，裴文中教授交給笔者几块产自广西柳城巨猿洞的龟类标本。这是几块陆龟属的破損肋板，骨板厚而寬大（厚11—16毫米），代表一种个体頗大的陆龟。这几块标本虽然不能作出种的鉴定，但它代表我国更新世陆龟属动物的首次記录[1]，因而很有意义。

1962年，中国科学院古脊椎动物与古人类研究所广西野外工作队又在巨猿洞里发現了两件龟类标本。一件是两块相連的陆龟属的破損肋板。骨板厚8毫米，每块肋板前后长約34毫米，左右寬100毫米以上。显然，这也是一种个体較大的陆龟，但比上述的那种为小。另一件是一个基本完整的背甲，甲壳上盾片（scute）构造清楚可辨，而骨板（plate）构造则較模糊，特别是后面椎板（vertebral plate）部分。但从其甲壳的一般性質和高凸的背甲特征来看，可以归于陆龟属。

陆龟属化石在我国第三紀地层中屢有发現，特别是华北上新統中，发現的材料更多。但是，第四紀的陆龟化石在我国却还甚为少見，这里記述的标本还是迄今能鉴定属种的首次記录。

## 标本記述

### *Testudo tungia*, sp. nov.

**标本**：基本完整背甲一个。野外編号62.5704。古脊椎动物与古人类研究所标本登記号V. 2768。

**产地及时代**：广西柳城巨猿洞。更新世早期。

**特征**：甲壳椭圓形，中等大小；背甲高凸，最大高度位于中部。椎板不成大的八角形和小的四边形交替；除第二椎板八角形外，其余都为四边形。肋板內、外端长度交替变化，但不显著。第二椎盾狭长，第一、三、四、五椎盾皆寬大于长。肋緣縫（costo-peripheral suture）和肋緣沟（costo-marginal sulcus）一致。上尾盾（suprascute）分离。

**标本描述**：甲壳中等大小，椭圓形；长142毫米，寬101毫米，高64毫米；最大高度位于中部，漸向前、后傾斜。椎板8块，頸板和后部椎板以及臀板部分的骨縫不清。椎板一般較寬，但其外形不成大的八角形和小的四边形的交替。第一椎板略成正方形。第二椎板八角形，长19毫米，中部寬16毫米，前側边甚短于后側边。第三椎板多少成长方形，长

* 7月2日收到。

1）前此，作者曾在我所旧藏材料中整理出一件产自山西汾阳的破損陆龟标本。据标籤标明，該标本产自第四紀，但是否确实，尚有疑問。

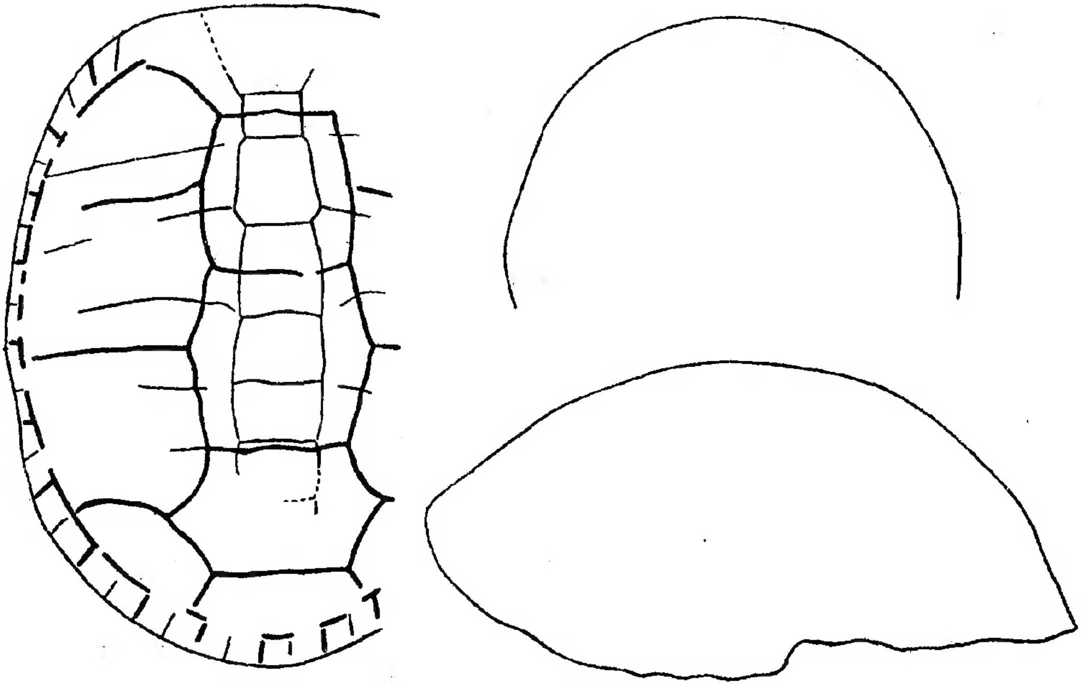


图1. *Testudo tungia*, sp. nov. V. 2768. ca. × 2/3
左,正型标本背甲素描;右上,正型标本中部横切,示背甲高度;右下,正型标本外形輪廓左視。
(Left, sketch drawing of type; right upper, transversal section of the same at middle line showing the vault of the carapace; right lower, outline of the type seen in left side)

大于寬。第四、五椎板皆成四边形,寬大于长。后部椎板界限不清,但都隐約成四边形。上臀板数目不易肯定,可能为一块。肋板內、外端长度虽成交替变化,但不很显著。第一肋板的外端长度显然大于內端长度。第二肋板的內端长度仅略小于外端长度。第三肋板內端长約 21 毫米,外端长約 14 毫米,外端小于內端。第四肋板的后緣分界不很清楚,可能內端略小于外端或內、外端长度大致相等。此后肋板的界限更为不清,难于肯定其长度变化情况。緣板 11 对,其构造和一般陆龟的无异。肋緣縫不明显,但甚可能与肋緣沟一致。盾沟除少許破損外,皆清晰可見。椎盾 5 块,仅第二块长大于寬,其余的皆寬大于长,其中以第一椎盾为最寬,第四椎盾次之。第一椎盾五角形,第二、三、四椎盾六角形,第五椎盾梯形。肋盾一般都横寬,仅最后一对长略大于寬。頸盾不清,可能很小。尾盾(caudal scute)分离为二。

**比較及討論**:这里記述的广西柳城巨猿洞的陆龟属新种标本,是我国迄今唯一能鉴定属种的第四紀陆龟属代表。我国过去关于本属动物的第四紀化石記录,总共仅只两起,一即上述的上次发現的广西柳城巨猿洞的标本,另一为山西汾阳的标本。前者仅由部分破碎骨板为代表,个体碩大。后者以一个完全破損的甲壳为代表,个体中等大小,背甲高凸而短圓。这两件标本都因保存不佳,都未作出种的鉴定。但从其个体大小或外形构造来看,显然皆与新种标本不同。至于現生陆龟,据文献記載,我国仅一种 *Testudo elongata* 分布于广西一带。这种陆龟个体也很大,甲壳长 270 毫米,寬 165 毫米,高 105 毫米,比我

**椎盾和肋盾测量（单位毫米）**

(Measurements of vertebral and costal scutes, in mm.)

| 椎盾 (V.S.) | 最大长度 (Max. L.) | 最大宽度 (Max. W.) | 肋盾 (C.S.) | 最大长度 (Max. L.) | 最大宽度 (Max. W.) |
|---|---|---|---|---|---|
| 1 | 32 | 50± | 1 | 37 | 47 |
| 2 | 37 | 30 | 2 | 33 | 52 |
| 3 | 35 | 37 | 3 | 34 | 45 |
| 4 | 30 | 43 | 4 | 30 | 26 |
| 5 | 21 | 33 | | | |

們的标本大得多。并且，它的成年个体椎板部分低平，第一椎盾通常长寬相若，第 2—4 椎盾的寬度大約与其相应的肋盾的寬度相等等特征，也与新种标本不同。我国上新世陆龟的种类較多，但它們的椎板构造一般都成大的八角形和小的四边形交替，肋板的內、外端长度也都成长、短的显著交替变化，因而也易与我們的标本区别开来。笔者建議将巨猿洞的陆龟标本訂一新种，名为洞陆龟（*Testudo tungia*），种名采自"洞"字的拼音。

研究龟鳖类的学者們一般都訊为，椎板外形在进化过程中大致具有这样一种趋势，即：从狭小的、側边朝后的六角形到寬大的、側边朝前的六角形，以致在陆龟动物中时常有几块椎板成为大的八角形和小的四边形的交替。大多陆龟属的种类都具有后一特征，但也有例外，我們这里記述的新种即其一例。此外如北美中新世早期的 *T. emiliae* 和中新世中期的 *T. inusitata* 等，它們的椎板外形也都不成大的八角形和小的四边形的交替，而是除第一椎板为四边形的外，其余都是六角形。另外，据称（Hay, 1908），某些現生陆龟属的种类，它們的椎板外形和肋板內、外端长度的分化程度，也幷不比 *Stylemys* 属的为大[1]。这些事实似乎說明，在陆龟属中，这些椎板外形不分化或分化不明显的种类，不是代表該属动物中較为古老的类型，它們与那些椎板外形显著分化的种类似乎不是直系亲属关系，而可能分别代表两类不同的进化支系；前者較多地保留了它們祖先类型的特征，而后者在上述部分的构造上作了較大的分化。

与欧洲、北美、非洲这几个大陆上的陆龟属动物的起始历史一样，我国最早的陆龟也出現于始新世（*Testudo ulanensis* Gilmore，內蒙古）。自始新世以后，在整个第三紀的各个地史时期中，我国都有該属动物的代表[2]，特别是华北上新世三趾馬紅层中，发現的种类和个体更多。可是，有意思的是，自从进入第四紀后，材料驟然減少，不論华南、华北，长期以来都未发現該类动物的标本，加之現生种类又很貧乏，故有人怀疑我国是否有第四紀陆龟。因此，本文关于巨猿洞陆龟属标本的記述，不仅肯定了第四紀陆龟动物在我国的存在，幷从現有的第四紀的化石材料来看，揣測我国这一时期至少生活着 3 种以上的陆龟。

1) *Stylemys* 属第三块以后的椎板为六角形的，第二块和第三块可能为六角形，也可能第二块为八角形，第三块为四边形。肋板內、外端长度分化显著或微弱。

2) 叶祥奎，"中国龟鳖类化石"（将出版）。

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# A NEW QUATERNARY *TESTUDO* FROM *GIGANTOPITHECUS* CAVE, LIUCHENG, KWANGSI

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## (Summary)

Two years ago, Prof. W. C. Pei had handed to the writer several isolated plates of fossil turtle. They are some costal plates of *Testudo*. It is the first record of this genus from Quaternary so far known in China. In winter, 1962, two specimens of *Testudo* were additionally obtained from the same cave by a field party of the Institute of Vertebrate Palaeontology and Palaeoanthropology. One of them includes two broken costals, each occuping a thickness of 8 mm, a fore-and-aft length of about 34 mm and a transversal width of more than 100 mm. They may be some remains of a larger individual of testudine. The other one is a nearly complete carapace, on which all the sulci of the scutes are distinct, but the sutures, especially those of the posterior neurals and costals, are obscure. However, it is possible to make a general description and a specific determination as following.

### *Testudo tungia*, sp. nov.

**Type:** A carapace, slightly broken. Field No. 62.5704. Cat. No. of IVPP V.2768.

**Locality and Horizon:** *Gigantopithecus* Cave, Liucheng, Kwangsi. Lower Pleistocene.

**Diagnosis:** Medium size; shell elliptic in form; carapace strongly arched, and with its highest point at middle. Neurals not alternated tetragonal and octagonal in shape. Second neural octagonal, others tetragonal. Costals alternated slightly narrower and wider at proximal and distal ends. Second vertebral scute narrower and longer, others wider than long. Costo-peripheral suture coincided with costo-marginal sulcus. Supracaudal

scute divided.

**Description:** The carapace of the type is ellipticed in form and strongly arched. It has a length of 142 mm, a width of 101 mm, and a highest depth at its middle point of 64 mm. As common in the genus, it occupies eight neurals, but in view of the anterior ones which are more or less clear, they are, though rather wide, not alternated tetragonal and octagonal in form. The first one is somewhat square; the second is octagonal, and with its antero-lateral sides much shorter than its postero-lateral ones. It has a length of 19 mm, a median width of 16 mm. The third neural is more or less rectangular in form, and bears a length longer than wide. The fourth and fifth are quadrilateral and wider than long. Besides these, all the succeeding neurals, superpygal and pygal plates are unclear. The width of the costal plates only slightly alternated at their proximal and distal ends. Width of the distal end of first costal is decidedly wider, and that of the third, which occupies 21 mm at proximal and 14 mm at distal ends, is narrower. The proximal limits of second and fourth costal plates are somewhat obscure, but they seem probably slightly wider distally. Behind the fourth, all the structures of the costals are difficult to be determinated. The sulci on the shell are observed clearly. The first vertebral scute is pentagonal, the fifth is trapezoid, the others are hexagonal. With the exception of the second one, all the vertebral scutes are wider than long, among which the first is the widest. The costal scutes are wide transversely except the last one which is longer. The costo-peripheral suture runs probably coincided with its costo-marginal sulcus. The supracaudal scute is divided in two parts.

Measurements of the vertebral and costal scutes may be referred to the table in the Chinese text.

**Comparison and Discussion:** Remains of fossil *Testudo* are commonly known in Tertiary beds in China, particularly from Hipparion Red clay of North China. But those from Quaternary are very rare, so far as it is known, there were only two discoveries. One of them was from Fenyang, Shansi, including a badly damaged shell on which none of the structure can be observed. It is a *Testudo* of medium size, and has a highly arched, short, and rounded outline[1]. The other one, which had mentioned already at the beginning of present paper, was from *Gigantopithecus* Cave too. It includes several broken bones. The bones are larger, and have a thickness of about 11—16 mm. It is more probably a *Testudo* of large size. These two specimens can be separated easily from new form by their size or outline. According to the records, there is only one species, *Testudo elongata,* now living in Kwangsi region. It has a length of 270 mm, a wide of 165 mm which much larger than our species. Similarly, the species from Pliocene of our country differ also from present one in having an alternation in their neurals and costals. Therefore, a new species, *Testudo tungia,* is proposed, the specific name is derived from a pronunciation of a Chinese word that means "cave".

Neurals in land tortoises, especially in genus *Testudo,* are generally broad, and several of them may become alternately octagonal and quadrilateral. But, on the other hand, there are still some members of *Testudo* having no such an alternation in their neurals, such as the species just described above, *T. emiliae* of Lower Miocene and *T. inusitata* of Middle Miocene of North America, etc. Furthermore, according to Hay (1908),

1) The exact horizon of this specimen is still doubtful.

some living species of this genus have the neurals and costals little more differentiated than in *Stylemys*. In view of these facts, it seems to the writer that the two different forms of *Testudo* mentioned above probably represent two different lines of this genus in evolution.

Since the first appearance of *Testudo* in China in Upper Eocene, all the succeeding epoches of Tertiary are represented by its members, especially in Pliocene from which numerous individuals and species have been recognized. However, it is interesting to notice that from the beginning of Quaternary, the material of it becomes suddenly rare. The present form is the first record of species of this genus known from Quaternary in China. But in view of the different shape and size of the Quaternary specimens now at hand, it seems reasonably to suggest that there were at least three species living in that time in China.



1. *Testudo tungia*, sp. nov. V. 2768. ca. × 4/5
上，正型标本背视，下，正型标本左侧视
(Upper, dorsal view of type; lower, left side view of the same)